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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/698,824	10/26/2000	Omprakash S. Sarmaru	VELCP003	7360
28436	7590	11/18/2004	EXAMINER	
IP CREATORS P. O. BOX 2789 CUPERTINO, CA 95015			DO, CHAT C	
			ART UNIT	PAPER NUMBER

2124

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/698,824

Applicant(s)

SARMARU ET AL.

Examiner

Chat C. Do

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,5-10,12,14,16-19,22 and 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5-10,12,14,16-19,22 and 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 06/23/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This communication is responsive to Amendment, filed 06/17/2004.
2. Claims 1, 3, 5-10, 12, 14, 16-19, and 22-23 are pending in this application. Claims 1 and 12 are independent claims. In Amendment, claims 1, 3, 5-10, 12, 14, 16-19, and 22-23 are amended and claims 2, 4, 11, 13, 15 and 20-21 are cancelled. This office action is made non-final.

Claim Objections

3. Claim 5 is objected to because of the following informalities:

Re claim 5, the applicant is advised to amend the phrase "the at least one at least one" in line 3 as "at least one" for avoiding duplication parts.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 3, 5-10, 12, 14, 16-19, and 22-23 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claim 1, the limitations "limited to solutions to a single unsolved one of the output node" in lines 2-3 first paragraph of page 8 is unclear. The examiner cannot

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broadly interpret the limitation. For examination purposes, the examiner disregards the limitation. Claim 12 has the same rejection.

Re claim 8, all the parameters (n_c , n_r , k_r , k_c , $W_{c\ c}^{n\ k}$, $W_{c\ r}^{n\ k}$, $W_{r\ r}^{n\ k}$) in equations (1A and 1B) are undefined and indefinite in value. For examination purposes, the examiner considers these parameters as position at instant column, instant row, wherein k and c are two difference parameter, and coefficients at any instant column column, column row, and row row respectively. Claims 9, 19, and 22 have the rejection.

Re claim 10, the limitation "the interval" in line 2 lacks an antecedence basis. The applicant does not specific which interval in precedence claim. For examination purposes, the examiner considers the limitation as an interval.

Thus, claims 3, 5-7, 14, 16-18, and 23 are also rejected for being depend on the rejected based claims 1 and 12 respectively.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 3, 5-7, 12, 14, and 16-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Long (U.S. 6,240,141).

Re claim 1, Long discloses in Figures 6A-6B, 7A-7D, and 8 an apparatus for processing input sample sets of at least one discrete multi-tone (DMT) modulated communication channel (abstract lines 3-6) and the apparatus comprising: an input memory storing (42 and 44 in Figure 8 and set of data in i and k direction in Figure 6A) each input sample set of a two-dimensional array rows (e.g. 0, 4, 8....60 in Figure 6A) and columns of samples (e.g. 0, 1, 2, 3 in Figure 6A); an output memory (Figure 6B) storing two-dimensional arrays of rows (e.g. $X(1,k)$ in Figure 6B) and columns of coefficients (e.g. $X(i,1)$ in Figure 6B) resulting from a corresponding one of a time-to-frequency domain transformation and a frequency-to-time domain transformation (col. 5 lines 54-59) of each input sample set and a two-dimensional ($N1$ and $N2$) Fourier transform circuit coupled between the input (table 1 of $X(N)$ in Figure 6A) and output memory (table 2 of $X(N)$ in Figure 6B) to perform the corresponding transformation of the input sample set and having: row transform components (22 in Figure 6A) including a Radix-R butterfly having "R" inputs and "R" output nodes: and the row transform components generating partial row transforms (output of 22 in Figure 6A) limited to solutions to a single unsolved one of the "R" output nodes of the Radix-R butterfly on each of the "R" iterations through ordered sets of samples from each input sample set: and column transform components (24 in Figure 6A) coupled to the row transform components and configure to generate complete column transforms (output to the Figure 6B) from the partial row transforms generated by the row transform components prior to a completion of the "R" iterations through each input sample set by the row transform

components (22 and 24 process simultaneously): thereby to reduce an interval required to transform each successive input sample set.

Re claim 3, Long further discloses in Figures 6A-6B, 7A-7D, and 8 the input memory (table 1 of $X(N)$ in Figure 6A) further comprises: "R" separate memories each storing contiguous blocks of columns of the two- dimensional array or rows (e.g. $X(1,k)$) and columns (e.g. $X(i,1)$) of samples of each input sample set and each of the "R" separate memories coupled to a corresponding one of the "R" inputs of the Radix-R butterfly (couple to 22).

Re claim 5, Long discloses in Figures 6A-6B, 7A-7D, and 8 the at least one discrete multi-tone (abstract) comprises a first DMT communication channel associated communications on a first subscriber line (col. 1 lines 50-55) and a second DMT communication channel associated with communications on a second subscriber line (col. 1 lines 50-55) and the first and second DMT communication channels difference from one another in a number of samples over sample set (col. 1 lines 50-55 wherein each user has difference carrier frequencies).

Re claim 6, Long discloses in Figures 6A-6B, 7A-7D, and 8 the row transform components begin processing the next sample set before the column transform components have completed all the column transforms on a prior sample set (Figure 6A as pipeline).

Re claim 7, Long discloses in Figures 6A-6B, 7A-7D, and 8 the ordered set of samples processed by the row transform components further comprise samples separated from one another in each row of the input memory by a spacing substantially equal to a

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number of columns in the input sample array divided by "R" (e.g. in table 1 of X(N) in Figure 6A, the first butterfly data operation is separated from the next butterfly data operation by 1 as N/R).

Re claim 12, it is a method claim of claim 1. Thus, claim 12 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 14, it is a method claim of claim 3. Thus, claim 14 is also rejected under the same rationale as cited in the rejection of rejected claim 3.

Re claim 16, it is a method claim of claim 5. Thus, claim 16 is also rejected under the same rationale as cited in the rejection of rejected claim 5.

Re claim 17, it is a method claim of claim 6. Thus, claim 17 is also rejected under the same rationale as cited in the rejection of rejected claim 6.

Re claim 18, it is a method claim of claim 7. Thus, claim 18 is also rejected under the same rationale as cited in the rejection of rejected claim 7.

Allowable Subject Matter

8. Claims 8-10, 19, and 22-23 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments with respect to claims 1, 3, 5-10, 12, 14, 16-19, and 22-23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. U.S. Patent No. 5,408,425 to Hou discloses a split-radix discrete cosine transform.
- b. U.S. Patent Application No. 2003/0115233A1 to Hou et al. disclose a performance optimized approach for efficient down sampling operations.

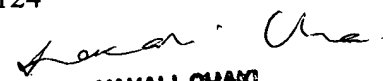
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chat C. Do whose telephone number is (571) 272-3721. The examiner can normally be reached on M => F from 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chaki Kakali can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chat C. Do
Examiner
Art Unit 2124

November 5, 2004


KAKALI CHAKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

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